

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Canceled).

1 2. (Currently Amended) The method of claim 4 23, further comprising:
2 forming an ordered set of deadlock-free sub-topologies of said network,
3 each sub-topology comprising links that are not used in any other sub-topology;
4 and
5 generating said routing table in response to said ordered set of deadlock-
6 free sub-topologies.

1 3. (Original) The method of claim 2, wherein said forming said ordered set of
2 deadlock-free sub-topologies of said network further comprises forming at least
3 one sub-topology of said network that is a spanning layer of said network.

1 4. (Original) The method of claim 3, further comprising maintaining a cost of a
2 corresponding link between each of said nodes in said network within each entry
3 of said routing table.

1 5. (Original) The method of claim 4, wherein said adding said column to said routing
2 table further comprises:
3 for each entry within said column, performing the following steps
4 determining a set of cost values, wherein each value within said set
5 of cost values reflects a sum of the cost of reaching a selected neighbor
6 node of said node from said corresponding forwarding node and the cost
7 of reaching said node from said selected neighbor node,
8 determining a minimum value of said set of cost values, and

9 determining forwarding information for said entry indicating said
10 selected neighbor node associated with said minimum value.

1 6. (Original) The method of claim 4, wherein said adding said row to said routing
2 table further comprises:
3 for each entry within said row, performing the following steps
4 determining a set of cost values, wherein each value within said set
5 of cost values reflects a sum of the cost of reaching said corresponding
6 destination node from a selected neighbor node of said node and the cost
7 of reaching said selected neighbor node from said node,
8 determining a minimum value of said set of cost values, and
9 determining forwarding information for said entry indicating said
10 selected neighbor node associated with said minimum value.

7. (Canceled).

1 8. (Currently Amended) The system of claim 7 24, wherein said routing logic is
2 further operable to:
3 form an ordered set of deadlock-free sub-topologies of said network, each
4 sub-topology comprising links that are not used in any other sub-topology; and
5 generate said routing table in response to said ordered set of deadlock-
6 free sub-topologies.

1 9. (Original) The system of claim 8, wherein said routing logic is further operable to
2 form said ordered set of deadlock-free sub-topologies of said network further by
3 forming at least one sub-topology of said network that is a spanning layer of said
4 network.

1 10. (Original) The system of claim 9, wherein said routing logic is further operable to
2 maintain a cost of a corresponding link between each of said nodes in said
3 network within each entry of said routing table.

1 11. (Original) The system of claim 10, wherein routing logic operable to add said
2 column to said routing table is further operable to perform the following steps for
3 each entry within said column:

4 determine a set of cost values, wherein each value within said set of cost
5 values reflects a sum of the cost of reaching a selected neighbor node of said
6 node from said corresponding forwarding node and the cost of reaching said
7 node from said selected neighbor node;

8 determine a minimum value of said set of cost values; and

9 determine forwarding information for said entry indicating said selected
10 neighbor node associated with said minimum value.

1 12. (Original) The system of claim 10, wherein said routing logic operable to add said
2 row to said routing table is further operable to perform the following steps for
3 each entry within said row:

4 determine a set of cost values, wherein each value within said set of cost
5 values reflects a sum of the cost of reaching a corresponding node from a
6 selected neighbor node of said node and the cost of reaching said selected
7 neighbor node from said node;

8 determine a minimum value of said set of cost values; and

9 determine forwarding information for said entry indicating said selected
10 neighbor node associated with said minimum value.

1 13. (Currently Amended) The system of claim 7 24, wherein said routing logic
2 comprises at least one digital logic circuit.

1 14. (Currently Amended) The system of claim 7 24, wherein said routing logic
2 comprises program code loaded into a memory of a computer system.

15. (Canceled).

16. (Canceled).

17. (Canceled).

18. (Currently Amended) A method for inserting routing information regarding a node into a routing table, wherein said routing table defines a deadlock-free set of paths through a network of nodes connected by a plurality of links, comprising:

identifying an ordered set of layers within the network, each layer comprising a deadlock-free sub-topology within the network that is composed of links that are not part of any other layer;

obtaining identification of at least one link operable to deliver data to said node;

obtaining identification of at least one link operable to convey data transmitted from said node;

storing said identification of said at least one link operable to deliver data to said node into a new highest layer within ~~an~~ the ordered set of layers ~~upon~~ from which said deadlock-free set of paths are derived;

storing said identification of said at least one link operable to convey ~~day~~ data transmitted from said node into a new lowest layer within said ordered set of layers upon which said deadlock-free set of paths are derived; and

adding routing information to said forwarding table that reflects said new lowest layer and said new highest layer.

19. (Currently Amended) A method for inserting routing information regarding a unidirectional link into a routing table, wherein said routing table defines a deadlock-free set of paths through a network of nodes connected by links, comprising:

identifying an ordered set of layers within the network, each layer comprising a deadlock-free sub-topology within the network that is composed of links that are not part of any other layer;

8 adding said unidirectional link into a new layer within an the ordered set of
9 layers upon from which said deadlock-free set of paths are derived; and
10 recalculating said deadlock-free set of paths in response to said adding of
11 said unidirectional link into said new layer.

1 20. (Currently Amended) A method for inserting routing information regarding a bi-
2 directional link into a routing table, wherein said routing table defines a deadlock-
3 free set of paths through a network of nodes connected by links, wherein said bi-
4 directional link is between a first node and a second node, comprising:
5 identifying an ordered set of layers within the network, each layer
6 comprising a deadlock-free sub-topology within the network that is composed of
7 links that are not part of any other layer;

8 determining a first unidirectional link from said first node to said second
9 node;

10 determining a second unidirectional link from said second node to said
11 first node;

12 adding said first unidirectional link to a lowest layer within an the ordered
13 set of layers upon from which said deadlock-free set of paths are derived;

14 adding said second unidirectional link to a highest layer within said
15 ordered set of layers upon from which said deadlock-free set of paths are
16 derived; and

17 recalculating said deadlock-free set of paths.

1 21. (Currently Amended) The method of claim 4 23, further comprising iteratively
2 performing said steps of adding a row of entries and adding a column of entries
3 in order to add routing information to said routing table for a plurality of nodes.

1 22. (Currently Amended) The method of claim 22 23, wherein said existing deadlock-
2 free set of paths are through a network of two nodes.

1 23. (New) A method for adding routing information for a new node to a routing table
2 with a plurality of entries that reflect an existing deadlock-free set of paths
3 through a network of nodes, wherein the routing table has a row for each source
4 node in the network and a column for each destination node in the network and
5 wherein a table entry located at an entry row and an entry column identifies a link
6 that can be used to send data from the source node in the entry row to the
7 destination node in the entry column, the method comprising:

8 adding to the routing table, a row including a plurality of entries, each entry
9 identifying a link that directly connects the new node to a neighbor node that can
10 be connected, via existing deadlock-free paths described by the table, to a
11 destination node associated with the entry column; and

12 adding to the routing table a column including a plurality of entries, each
13 entry identifying a link that can be used to connect a source node associated with
14 the entry row, via existing deadlock-free paths described by the table, to a
15 neighbor node that can be directly connected to the new node.

1 24. (New) A system for adding routing information for a new node to a routing table
2 with a plurality of entries that reflect an existing deadlock-free set of paths
3 through a network of nodes, wherein the routing table has a row for each source
4 node in the network and a column for each destination node in the network and
5 wherein a table entry located at an entry row and an entry column identifies a link
6 that can be used to send data from the source node in the entry row to the
7 destination node in the entry column, comprising routing logic operable to:

8 add to the routing table, a row including a plurality of entries, each entry
9 identifying a link that directly connects the new node to a neighbor node that can
10 be connected, via existing deadlock-free paths described by the table, to a
11 destination node associated with the entry column; and

12 add to the routing table a column including a plurality of entries, each entry
13 identifying a link that can be used to connect a source node associated with the
14 entry row, via existing deadlock-free paths described by the table, to a neighbor
15 node that can be directly connected to the new node.

1 25. (New) A system for adding routing information for a new node to a routing table
2 with a plurality of entries that reflect an existing deadlock-free set of paths
3 through a network of nodes, wherein the routing table has a row for each source
4 node in the network and a column for each destination node in the network and
5 wherein a table entry located at an entry row and an entry column identifies a link
6 that can be used to send data from the source node in the entry row to the
7 destination node in the entry column, comprising:

8 means for adding to the routing table, a row including a plurality of entries,
9 each entry identifying a link that directly connects the new node to a neighbor
10 node that can be connected, via existing deadlock-free paths described by the
11 table, to a destination node associated with the entry column; and

12 means for adding to the routing table a column including a plurality of
13 entries, each entry identifying a link that can be used to connect a source node
14 associated with the entry row, via existing deadlock-free paths described by the
15 table, to a neighbor node that can be directly connected to the new node.

1 26. (New) A computer program product including a computer readable medium, said
2 computer readable medium having a computer program stored thereon, said
3 computer program for adding routing information for a node to a routing table,
4 wherein said routing table includes routing information reflecting an existing
5 deadlock-free set of paths through a network of nodes, said computer program
6 comprising:

7 program code for adding to the routing table, a row including a plurality of
8 entries, each entry identifying a link that directly connects the new node to a
9 neighbor node that can be connected, via existing deadlock-free paths described
10 by the table, to a destination node associated with the entry column; and

11 program code for adding to the routing table a column including a plurality
12 of entries, each entry identifying a link that can be used to connect a source node
13 associated with the entry row, via existing deadlock-free paths described by the
14 table, to a neighbor node that can be directly connected to the new node.

1 27. (New) A computer data signal embodied in a carrier wave, said computer data
2 signal including a computer program stored, said computer program for adding
3 routing information for a node to a routing table, wherein said routing table
4 includes routing information reflecting an existing deadlock-free set of paths
5 through a network of nodes, said computer program comprising:
6 program code for adding to the routing table, a row including a plurality of
7 entries, each entry identifying a link that directly connects the new node to a
8 neighbor node that can be connected, via existing deadlock-free paths described
9 by the table, to a destination node associated with the entry column; and
10 program code for adding to the routing table a column including a plurality
11 of entries, each entry identifying a link that can be used to connect a source node
12 associated with the entry row, via existing deadlock-free paths described by the
13 table, to a neighbor node that can be directly connected to the new node.